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ABSTRACT

This tutoring strategies course designed to prepare tutors in a machine tool technology program was developed during a project to retrain defense industry workers at risk of job loss or dislocation because of conversion of the defense industry. Course contents are as follows: why you are here; qualifications of a tutor; what's in it for tutors, trainees, and the company; principles of adult learning; when you are presented with information, you will remember...; types of learning styles; types of learners--self-check; auditory learner; methods of auditory types; visual learner; methods for visual learners; kinesthetic learner; methods for kinesthetic learners; four words in tutoring (tell, show, do, review); steps to tutoring; giving feedback; actions for giving feedback; and tutoring example. (MN)

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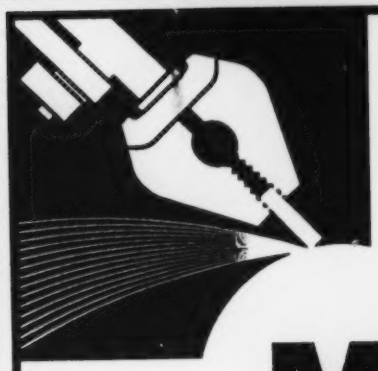

Machine Tool Technology

Tutoring Strategies for Metal Workers

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MINNESOTA DEFENSE CONVERSION ADJUSTMENT DEMONSTRATION PROJECT

Machine Tool Technology Training

Tutoring Resource Guide

State of Minnesota, Department of Jobs and Training
Minnesota Teamsters Service Bureau
Alliant Techsystems
Minnesota Teamsters Local 1145
Saint Paul Technical College

Curriculum Project Outline of Training Resource Guide
for Metal Workers Tutoring Course

Introduction to Course

Overview of course

The goal of this training course it to develop your skills as a tutor in informal situations. For example: when a co-worker asks you how to troubleshoot a machine or tooling problem, you'll have a more "polished" approach on how to communicate with him or her.

Contents of the Course

- Section One: Why you are here
- Section Two: Qualifications of a tutor
- Section Three: What's in if for you, the trainee and the company
- Section Four: Adults as learners
- Section Five: Styles of learning
- Section Six: Tell, show, do, review
- Section Seven: Providing feedback
- Section Eight: A tutoring situation
- Section Nine: Question and answer discussion

Why you are here...

The goal of this two hour session is to help you communicate more effectively as a tutor.

List two common troubleshooting questions that your co-workers ask you. Then discuss how you help them solve these problems...

Question

Your Solution

Question

Your Solution

Discussion:
When you leave a co-workers work area after helping him/her with a problem, how do you know if he/she understood what you told them?

Qualifications of a Tutor

Extensive work experience

Technical mastery

Tutor training

Respect from peers

Personality traits

- Enthusiasm
- Willing to learn and grow
- Self-motivated
- Emotional maturity
- Positive attitude
- Patience and acceptance
- Interpersonal skills
- Sincerity

Communication Skills

- Ability to explain things in detail
- Ability to share without dominating
- Ability to coach and guide
- Ability to focus on the goal of the problem
- Ability to answer questions effectively

What's in it for us?

What in it for you, the tutor?

Recognize your know-how
Increase your responsibility
Learn through interaction from trainees
Feeling of accomplishment
Role models
Jobs become more interesting
Challenge to expand own skills
Gain satisfaction of helping others do their jobs better
Other: _____
Other: _____

What's in it for the trainee?

Reduce chances of mistakes
Reinforce unsafe work habits
New skills for newer workers
Enhance self-esteem
Reduce nervousness about working on new job or new machine
Better working relationship within the work teams
Other: _____
Other: _____

What's in it for the company?

More efficient learning
More effective learning
Savings in labor costs
Reduced materials waste
Clarify workmanship standards
Leads to improved quality
More satisfied employees
Other: _____
Other: _____

Principles of Adult Learning

Think about when you are tutoring. How can you make sure you are applying these ten principles...

Adults learn better:

1. In an informal, non-threatening environment.
2. When learners recognize the need to learn.
3. When learning needs and styles are considered.
4. When knowledge and experience are valued and used.
5. When learners have some control over the methods to help learning occur.
6. Through active mental and physical participation in the learning activities.
7. When sufficient time is provided to practice the new skills.
8. When there are opportunities to apply learned content in realistic situations.
9. When supervisors and peers support learning.
10. When there is some measure of performance so that a learner has a sense that progress has been made.

You will remember...

When you are presented with information, you will remember:

10% of what you hear
20% of what you see
50% of what you read
90% of what you do

Discussion:
When you are helping a co-worker troubleshoot a problem on the floor, why is it important for him/her to fix the problem with your help, rather than watch you fix it?

Discussion:
When you have a problem on the shop floor, how would you like to have the information you need given to you so you can solve the problem?

Is there more than one way to give this information to you?

Types of Learning Styles

You and your co-workers absorb information in many different ways.

For example: when you are meeting a friend for a beverage after work at a place you've never been to before, you may ask for verbal directions while another co-worker may want a map drawn on paper.

One way to individualize your tutoring assistance is according to a trainee's preferred learning style.

What are learning styles? The ways in which an individual perceives, gathers, and processes information in order to learn, solve problems, work,and relate to others. The personality and behavior of adults are influenced greatly by their preferred learning style.

Three types of learning styles:

1. Auditory - likes to hear information
2. Visual - likes to see information presented in pictures
3. Kinesthetic - likes to build or recreate the problem

Types of Learners: Self Check

Check off all the statements that best describe you:

Visual Learners:

___1. I like to use a white board or flip chart when available.

___2. I prefer to see the "big picture" before listening to the details or carrying out an action.

___3. When given a choice, I like visuals.

___4. I sometimes forget to share my internal picture of how I visualize a completed project.

___5. I like to read and see something, rather than listen to someone explain the details.

___6. If not given a picture, I will make up one in my head or on paper.

___7. I need visual order. I prefer to see things organized, neat, and tidy. (For example: my work area.)

___8. When getting directions, I want to see a commercial map or have one drawn for me. I am usually on the lookout for landmarks.

___9. I like to explain a situation by giving someone a picture of it.

__10. I prefer to learn how to work on a computer by watching someone first.

Auditory Types

___1. I process information best by hearing details and statistics.

___2. I listen and remember the details of what was said.

___3. I think visuals are not as important as hearing a clear, organized format.

___4. I want to hear how to work on a computer by listening to someone tell me the steps and "how-to's."

___5. I may repeat internally to myself or out loud what has just been said.

___6. While trying to listen to someone, I am distracted by background noise, such as the phone ringing.

___7. When getting directions, I prefer to hear how to get there. I want to know the street names and distances, and I sometimes plot out the distances on a map.

___8. I am a good organizer of facts and data.

___9. I retain information better by hearing myself say it out loud.

__10. I can be easily irritated if the person talking does not have a pleasant sounding voice.

Kinesthetic Types

___1. I prefer to learn how to work on a machine by doing it, when I get stuck, I ask questions or look up the answer.

___2. While listening, I like to do other things. (For example: open my mail while someone is talking.)

___3. I have a tendency to go off on tangents rather than stick to the main point.

___4. My role is to "massage" data and look at it in many different ways.

___5. I find that many times, as soon as a fact is stated, it has gone in one ear and out the other. I listen more for the feeling behind the words.

___6. When asking directions, I want to point in the right direction and will find the place sooner or later. I am frequently in trouble with a spouse or friend who does not want to drive around for an hour while I am getting a sense of where to go.

___7. I may ask questions before a speaker even begins to present his or her major points and issues.

___8. I am a doer.

___9. I like to discuss a half-formed idea until it feels workable.

__10. I enjoy asking questions.

Add up how many you have for each style?

_____ Visual

_____ Auditory

_____ Kinesthetic

Do you have one dominant style or do you use a combination of styles to learn and process information?

The Auditory Learner

Observations

1. Often a "talker" - seldom quiet.
   Tells jokes, tall tales, is full of excuses why something is not done.

2. Often has poor handwriting, drawing, and other art work.
   Has trouble reproducing seen figures, letters, has poor visual memory.

3. Remembers spoken words or ideas quite well. May answer better when questions are read to him/her than when they read them themselves.

4. Likes musical and rhythmic activities and records.

5. Sometimes memorizes easily.
   Often knows all the words to songs.

6. Quite often is physically awkward.

7. Appears to be brighter than his/her IQ score.

8. Often has a poor perception of space and may get lost in unfamiliar surroundings.

9. Often has poor perception of time and space. Often does not keep track of time easily.

10. Often has mixed laterality (left handed - right footed).

11. Often reverses p-q, b-d, n-v when writing.

Discussion:

Based on observations of your co-workers, do you know someone who may be an auditory learner?

Methods for Auditory Types

Tutoring for Auditory Types

1. Teach them to talk through the steps in a task or activity.
2. Encourage them to spell out loud so they can hear the letters.
3. Say the syllables out-loud when attacking technical terms.
4. Encourage them to think out loud and listen to what they are saying.
5. Utilize tape-recorded instruction for information.
6. Use a lot of audio equipment in the learning process.

Discussion:

Based on the tutoring methods discussed above, how would you help a co-worker, who is an auditory learner, troubleshoot a tooling problem?

The Visual Learner

Observations

1. Often do better when you show them rather than tell them. May have difficulty getting directions orally.
2. Have the tendency to watch your face intently when they are read or spoken to .
3. Like to look at books and pictures; often enjoy working with puzzles.
4. They like things orderly and neat. They often dress in an attractive manner.
5. The can generally find things that are lost, and seldom misplace their own things.
6. They notice details. They are good proof readers; see typing errors.
7. They can find pages and/or places in a book quite easily.
8. They often draw reasonably well, at least with good balance and symmetry.
9. May use minimal words when responding to questions.

Discussion:

Based on observations of your co-workers, do you know someone who may be a visual learner?

Methods for Visual Learners

Tutoring Visual Learners

1. Give visual directions and demonstrations as often as possible.
2. Use flash cards and wall visuals.
3. Use plenty of maps, graphs, and charts using legend symbols.
4. Use color coding systems and other highly visual aids.
5. Use rulers and number-lines to develop their concepts of numbers and number skills.

Discussion:

Based on the tutoring methods discussed above, how would you help a co-worker, who is an visual learner, troubleshoot a tooling problem?

The Kinesthetic Learner

Observations

1. Is often quite literally a "mover" and considered hyperactive.
2. Appears to want to feel and touch everything. Rubs hands over objects.
3. Is usually well-coordinated.
4. Enjoys doing things with his or her hands. Likes to take things apart. Likes to put things together.
5. May truly enjoy writing things down.
6. Utilizes concrete objects as learning aids, especially those that can be manipulated easily.
7. Learns best by doing and exploring the environment.
8. Often has difficulty with numbers, letters, counting, sequencing, and alphabetizing. Had difficulty establishing one-to-one relationships in number values and difficulty learning abstract symbols.
9. Could be labeled as "underachiever."

Discussion:

Based on observations of your co-workers, do you know someone who may be a kinesthetic learner?

Methods for Kinesthetic Learners

Tutoring Kinesthetic Learners

1. Use movement as a tool to tutor.
2. Use learning aids such as sandpaper for tracing and felt markers for reinforcement.
3. Use all the concrete, manipulative devices possible in the teaching/learning mode.
4. Employ role playing where possible.
5. Let them "assist" you in creating learning aids.

Discussion:

Based on the tutoring methods discussed above, how would you help a co-worker, who is an kinesthetic learner, troubleshoot a tooling problem?

Four Words in Tutoring

Remember these four simple words:

TELL
SHOW
DO
REVIEW

Steps to Tutoring: 1 - 4

1. **Prepare yourself**
   - Clearly understand what the problem is
   - Locate all tools and supplies needed to solve the problem
   - Make sure the environment is safe for you and the learner

2. **Prepare the learner**
   - Verify what the learner knows and does not know about the situation
   - Motivate the learner by showing your enthusiasm

3. **TELL**
   - Tell the learner what steps must be taken to solve the problem
   - Tell the learner why they should know how to do all steps correctly

4. **SHOW**
   - Demonstrate or point to the various parts of the machine or tooling that need adjustments
   - Give your tips for doing it right
   - Explain any techniques that may not be common knowledge

Steps to Tutoring: 5 & 6

5. **DO**
   - Have the trainee troubleshoot the problem while you observe
   - While the trainee is troubleshooting, have him explain what techniques he is using

6. **REVIEW**
   - Give immediate feedback on how the trainee completed the troubleshooting task
   - Explain the correct procedure if necessary

Giving Feedback

Feedback is the response given to a trainee after he or she has completed a task. The trainees performance is compared to the desired result. The purpose of giving feedback is to let a trainee know how well he or she completed a task.

Feedback is used to encourage behaviors that should be repeated and discourage behaviors that are not acceptable.

Feedback can increase motivation by:

- Taking the guesswork out of performance expectations
- Keeping attention focused and interest high
- Increasing self confidence
- Letting trainees know when they meet or exceed workmanship standards
- Letting trainees know if they have just created a new or better way to solve a problem
- Reducing stress
- Providing recognition
- Improving communication
- Preventing trainees from failing to apply new skills

Remember: No news is <u>not</u> good news!

Actions for Giving Feedback

Use these actions when giving feedback during your tutoring sessions:

1. State the constructive purpose for giving feedback now.

2. Describe specifically what you observed.

3. Tell the trainee why it is important.

4. Ask the trainee for his or her reactions and ideas.

5. Summarize the tutoring situation and offer you support in the future.

Tutoring Example

Use these steps to teach a co-worker how to read a micrometer:

1. **Prepare yourself**
   - Clearly understand what the problem is
   - Locate all tools and supplies needed to solve the problem
   - Make sure the environment is safe for you and the learner

2. **Prepare the learner**
   - Verify what the learner knows and does not know about the situation
   - Motivate the learner by showing your enthusiasm

3. **TELL**
   - Tell the learner what steps must be taken to solve the problem
   - Tell the learner why they should know how to do all steps correctly

4. **SHOW**
   - Demonstrate the correct way to solve the problem
   - Give your tips for doing it right
   - Explain any techniques that may not be common knowledge

5. **DO**
   - Have the trainee troubleshoot the problem while you observe
   - While the trainee is troubleshooting, have him explain what techniques he is using

6. **REVIEW**
   - Give immediate feedback on how the trainee completed the troubleshooting task
   - Explain the correct procedure if necessary